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 TI Spectroscopic Characteristics and Intermolecular Interactions of
 Thiophene/Phenylene Co-Oligomers in Solutions
 AU Lee, Sung Ae; Hotta, Shu; Nakanishi, Fusae
 CS Department of Molecular Engineering, National Institute of Materials and
 Chemical Research, Tsukuba Ibaraki, 305-8565, Japan
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 DT Journal
 LA English
 CC 36-5 (Physical Properties of Synthetic High Polymers)
 Section cross-reference(s): 73, 76
 AB The electronic spectra of thiophene/phenylene co-oligomers were obtained
 in solns. and compared with those of oligothiophenes and oligophenylenes,
 as a class of organic semiconductors. The spectra are influenced by the mol.
 size and sequence arrangement of thiophene/phenylene chains. In the dilute
 regime (.apprx.10⁻⁵ M), monomer emissions prevail. The quantum efficiency
 of fluorescence emission of co-oligomers is 0.79 and 0.74, for
 4,4'-bis(2-thienyl)biphenyl (T2P) and 1,4-bis(5-phenylthiophene-2-
 yl)benzene (AC5), resp. The exptl. data in the dilute regime were compared
 with results of quantum chemical calcns. at semiempirical levels. Intermol.
 interactions become increasingly important at higher concns. The
 spectroscopic characteristics in this regime were studied for
 2,5-diphenylthiophene (P1T), 5,5'-diphenyl-2,2'-bithiophene (P2T), and
 1,4-bis(2-thienyl)benzene (T1P). By increasing the concentration, the
 co-oligomers show well-structured emission that is red-shifted relative to
 the monomer emission bands. New absorption shoulders appear in the longer
 wavelength region due to intermol. interactions. These features are
 assigned to intermol. ground-state complexes with fully overlapped
 π - π groups. Besides the above spectral features, T1P exhibits a
 long tail toward .apprx.700 nm in the absorption spectra at higher concns.
 and a broad emission band around 520 nm replaces the strong band at 450
 nm. These features are assigned to intermol. charge-transfer from a
 thiophene to a phenylene ring. The fluorescence emission of co-oligomer
 thin films are also red-shifted relative to the monomer emission. The
 origin of these emissions in the solid state was also studied. The
 oligomers and corresponding conducting polymers are of interest
 for use in electronic and photonic devices.
 ST thiophene phenylene oligomer electronic excitation chain sequence;
 fluorescence emission thiophene phenylene oligomer soln concn; conjugation
 chain electron transfer polythiophene polyphenylene; conducting
 polymer thiophene phenylene oligomer fluorescence
 IT Polymers, properties
 RL: PRP (Properties)
 (conjugated; electronic excitation and mol. sequence and concentration
 effects
 on absorption and emission spectra of thiophene/phenylene oligomers in
 solution)
 IT Charge transfer interaction
 Conducting polymers
 Electronic excitation
 Fluorescence
 UV and visible spectra
 (electronic excitation and mol. sequence and concentration effects on
 absorption and emission spectra of thiophene/phenylene oligomers in
 solution)
 IT Polyphenyls
 RL: PRP (Properties)

(oligomeric; electronic excitation and mol. sequence and concentration effects on absorption and emission spectra of thiophene/phenylene oligomers in solution)

IT Polymers, properties
 RL: PRP (Properties)
 (polythiophenes, oligomeric; electronic excitation and mol. sequence and concentration effects on absorption and emission spectra of thiophene/phenylene oligomers in solution)

IT Polymer chains
 (sequence and conjugation length; electronic excitation and mol. sequence and concentration effects on absorption and emission spectra of thiophene/phenylene oligomers in solution)

IT 1445-78-9, 2,5-Diphenylthiophene 1665-32-3, 5,5''-Diphenyl-2,2':5'2''-terthiophene 23354-94-1, 1,4-Bis(2-thienyl)benzene 83495-30-1, 5,5'-Diphenyl-2,2'-bithiophene 109359-51-5 238397-96-1 238397-97-2, 5,5''-Diphenyl-2,2':5',2'':5'',2'''-Quaterthiophene 256342-39-9
 RL: PRP (Properties)
 (electronic excitation and mol. sequence and concentration effects on absorption and emission spectra of thiophene/phenylene oligomers in solution)

IT 25190-62-9, Poly(p-phenylene) 25233-34-5, Polythiophene
 RL: PRP (Properties)
 (oligomeric; electronic excitation and mol. sequence and concentration effects on absorption and emission spectra of thiophene/phenylene oligomers in solution)

RE.CNT 65 THERE ARE 65 CITED REFERENCES AVAILABLE FOR THIS RECORD
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IT 109359-51-5

RL: PRP (Properties)

(electronic excitation and mol. sequence and concentration effects on
absorption and emission spectra of thiophene/phenylene oligomers in
solution)

RN 109359-51-5 CAPLUS

CN Thiophene, 2,2'-[1,1'-biphenyl]-4,4'-diylbis- (CA INDEX NAME)

